

CHAPTER 2 – ALTERNATIVES

ALTERNATIVE FORMULATION

Normally, issues identified during scoping are used to generate alternatives. However, because this project is being prepared under the Health Forest Restoration Act (HFRA) authorities, and its emphasis is to protect an at-risk municipal watershed, no alternatives to the proposed action are required unless proposed during scoping or collaboration [HR 1904, Section 104(c)(1)]. Instead, the Interdisciplinary Team (IDT) considered all of the issues proposed during scoping (see scoping letters and content analysis table in the project file), and where feasible, adjusted the original proposed action to resolve those issues the agency considered significant. In some cases, this was handled by adding mitigation to the project and in other cases, the design of the project was modified.

ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM DETAILED STUDY

Initial Fuelbreak Proposal from Pacific Biodiversity Institute

During the collaborative process, an initial sketch of what a fuelbreak might look like was offered to the collaborative representatives. The proposal, presented by Peter Morrison of Pacific Biodiversity Institute representing Bark (one of the collaborative representatives) detailed a three-tier tree removal fuelbreak along perimeter and interior roads in the watershed. The proposal included a 50-foot section on each side of the road that would have removed all vegetation. A full description of this proposal is located in the project record. The collaborative group agreed with the fuelbreak concept, but left their recommendation more general in terms of the specifics of the fuelbreak. In their final recommendation, they requested that the Forest Service examine a fuelbreak along perimeter and interior roads, but also allowing for wildlife and scenic characteristics.

Fuels Reduction Treatments in Stands within the Watershed

During collaborative discussions, representatives spent countless hours discussing the benefits and tradeoffs of treating stands at a landscape level within the watershed to reduce the risk of severe wildfire affecting water quality. In their final recommendations, the majority of the group recommended stand treatments as a second phase to fuels reduction in the watershed. Although many argued that a landscape-level treatment would be the most effective in reducing severe wildfire, there was not consensus among all collaborative representatives. The Barlow District Ranger wanted to start with a fuels reduction project that every collaborative representative supported and decided to only initially analyze a shaded fuelbreak to meet the purpose and need of the project. Future analysis may focus on a phase II landscape-level treatment.

Alternatives Considered in Detail

The No-action Alternative

Under this alternative, no hazardous fuels reduction treatments would be implemented. No thinning, prescribed burning, brush removal, mowing, or pruning would occur. There would be no landings, skid trails or temporary roads built to facilitate removal of fuels. No fire suppression openings would be created; therefore interagency fire suppression efforts would continue as they operate currently. None of the mitigation measures would be implemented. There would be no improvements made to the National Forest road system. The fuel hazard would not be reduced. Dead or dying trees would not be removed and may contribute to the fuel hazard. Natural fuels (pine needles and other dead vegetation) would not be removed and would continue to accumulate. Natural processes of decay are not likely to remove the down and dead woody debris before the next fire cycle. As the available fuel increases, so will the potential for a large stand-replacing wildfire event. Effects of the no-action alternative are analyzed by resource in Chapter 3.

Action Alternative

This alternative is the same as the Proposed Action described in Chapter 1. Details of the proposed treatments are provided in this section. Individual unit information can be found in Appendix B.

The proposed action is to establish a fuelbreak along roads surrounding the perimeter of The Dalles Municipal Watershed within the Mt. Hood National Forest boundary, including two interior roads as an added defensible location for wildland fire suppression operations. Perimeter roads include portions of 1700, 1700150, 1700151, 1700160, 1700161, 1700662, 1720, and 1720193. There are three interior roads included: 1721, 1721013, 1720190, and 1720192.

Approximately 1,500 acres would be treated and consist of thinning treatments at variable densities, with areas of openings where existing mortality from root disease does not allow for many trees to be retained.

The following describes the types of areas treated adjacent to roads bordering and entering the watershed for the City of The Dalles. They have been grouped according to stand health, size class, and general treatment. Acreages are summarized in the table that follows.

Group A Mature Mixed Conifer

This group consists of mature stands with varying amounts of grand fir, Douglas-fir, western hemlock, noble fir, Pacific silver fir, Engelmann spruce, western larch, western red cedar, lodgepole pine, and often, ponderosa pine. The stands are generally healthy, but have likely missed a fire cycle. Most are overstocked, with encroachment of climax species and a steady decline in seral species. Stands previously dominated by ponderosa pine are losing the pine component from the stress of competing with water-using grand fir and Douglas-fir encroachers.

The proposed treatment for Group A is to commercially thin the stands from below, retaining a moderate number of trees to create a shaded fuelbreak in the corridor adjacent to roads forming

the boundary of The Dalles watershed and select interior roads. In stands outside the Surveyor's Ridge Late Successional Reserve (LSR), residual trees would average 40 trees per acre in tractor units, and 35 trees per acre in cable units. Within the LSR, about 50-60 overstory trees per acre would be retained. Although the emphasis would be on large tree retention, trees from younger age groups would also be retained in many stands to provide structure and a future overstory. Understory clumps would serve to break up the line of sight for wildlife security and improve aesthetics.

Some of the residual trees may have lower branches pruned to reduce their ladder fuel potential. Historically present and more fire resistant species such as western larch, white pine and ponderosa pine would generally be favored as retention trees. Hazard trees of any species will be removed, but sound snags would be left where possible, especially in the LSR. Retention trees with moderate to heavy mistletoe infection may be girdled.

All unmerchantable material would be slashed and yarded or slashed and piled. Chipping of small trees and brush may be an option. Fuels (activity and natural) would be piled so that less than 15 tons per acre remain on the ground. Piles are to be left unburned over one winter season to allow nutrients to leach back into the soil.

Group B Mature Mixed Conifer with Root Disease and/or Dwarf Mistletoe

Mature stands of grand fir, Douglas-fir, western hemlock, noble fir, western larch, western red cedar, lodgepole pine, ponderosa pine, with substantial areas of root disease and/or dwarf mistletoe make up Group B. Areas of large woody debris from downed trees create fuel hazards in these stands.

Stands are in decline, unraveling, and building up fuels from dead trees and large foliage brooms created by dwarf mistletoe infection. Regeneration of climax species is occurring, but species susceptible to root disease will die within 15-20 years in root rot pockets. Douglas-fir, western larch, and ponderosa pine dwarf mistletoes will infect understory trees, perpetuating dwarf mistletoe and causing a decline in the basal and height growth of the infected trees. Heavily infected trees will die within about 15 – 20 years. Hazard trees will continue to be generated near the road.

The proposed treatment for stands in Group B is moderate to light retention, favoring species less susceptible to root disease as leave trees. The fuelbreak strip would be thinned from below where forest conditions are healthy enough to allow thinning. Root disease pockets would require patch clearcuts where no non-susceptible species exist. Planting of ponderosa pine, western larch, and western white pine is proposed in these openings to promote seral species, which are less susceptible to the most common root diseases in the area, as well as being more fire tolerant. Ponderosa pine and western larch need full sunlight to become established. Known patch planting units at this time include 43, 47, 48 and 52. A representative number of trees from all age classes would be left to ensure future overstory structure.

The number of residual trees per acre would vary with stand conditions and the availability of healthy leave trees, which are sparse in many areas. Western larch, white pine and ponderosa pine would be favored as leave trees where present and healthy. Residual trees should be live and

the largest available if dwarf mistletoe rating is 2 or less in western larch, Douglas-fir, or ponderosa pine. Where trees with dwarf mistletoe infection would be retained as part of the overstory in order to meet the desired number of stems per acre or partial retention Visual Quality Objectives (VQOs), these trees would be girdled to reduce infection to surrounding understory trees. Trees that are unlikely to become future hazard trees (meaning they don't lean toward the road) should be chosen for girdling. Hazard trees would not be marked as leave trees. Lower branches of residual trees may be pruned to 8', as long as ≥ 60 percent of crown remains.

Slashing and yarding and/or slashing and piling all unmerchantable material not marked as leave trees is proposed. Chipping of small trees and brush may be an option, but brush must also be treated for an effective fuelbreak.

Snag and downed wood objectives for units in the Late Successional Reserve would be met.

Group C Mature Pine Oak

Group C includes areas of mature and immature ponderosa pine and Oregon white oak, being encroached upon by Douglas-fir and grand fir. Ponderosa pine is stressed by competition on dry sites from encroaching Douglas-fir and grand fir and will eventually die out of the stand. Some mortality is occurring in remnant large diameter pine.

The proposed treatment is thinning from below to a moderate retention level: Ponderosa pine and Oregon white oak would be retained where there is encroachment by Douglas-fir and grand fir. This would restore the forest type to its historical structure when fire was a frequent disturbance agent. Individual oak trees would be "released" (given room to grow) by eliminating fir immediately surrounding the oak. Hazard trees within striking distance of the road would not be retained.

Thinning slash will be piled and burned or chipped, depending on stewardship contractors' equipment capabilities.

Group D Plantation Thinning and Pruning

Group D consists of sapling to immature stands from regeneration harvest 15-30 years ago. Stands typically contain grand fir, Douglas-fir, ponderosa pine, western white pine, western hemlock and western larch. Some stands still have a seed tree or shelterwood overstory. These usually have some level of dwarf mistletoe that is contaminating the understory. Some stands have root disease centers. Low branches create fuel ladders. Stands are generally not overstocked for timber production but some have continuous fuel for fire to burn through crowns. The commonly existing stocking of 300 trees per acre is suitable for tree growing, but does not meet the objective for a fuelbreak.

The proposed treatment for stands in Group D is to thin from below, treating the entire previously regenerated stand where fuel reduction is needed. Within 200' of the road, density would be reduced to 100 to 150 trees per acre, favoring leaving western larch, ponderosa pine, western white pine where available and healthy. This would result in an average spacing of 16-20', but variable density is desired. Beyond 200 feet, more trees would be retained. Trees with dwarf mistletoe, poorly formed trees, or trees that have been topped for Christmas trees would

not be retained. Where residual overstory trees are infected with dwarf mistletoe, these would be girdled to stop infection of understory.

Stands within the LSR would retain a higher number of trees per acre, to meet LSR objectives of 60 percent canopy cover.

Brush species present typically are manzanita, ocean spray, chinquapin, willow and cottonwood. Brush will be reduced in the stands to achieve fuel reduction objectives. This may be accomplished mechanically or manually. Pruning of lower 8' of trees would occur where needed to reduce individual torching potential, as long as 60 percent live crown would remain.

Activity fuels would be piled and burned or otherwise removed from the stand. About 5 to 10 tons per acre of downed wood would be left for soil productivity. Some of these stands may be maintained by future underburns.

Group E Plantation Thinning and Pruning by Force Account

Similar to D, but thinning and pruning may be achieved by Forest Service hand crews due to light stocking of trees and shrubs, with generally grassy openings. Fuels would be hand piled and burned. Hazard tree felling would be needed in some cases.

Group F Prescribed Fire

This group is natural bunchgrass meadows with some juniper, pine, and Douglas-fir encroachment. Relatively minor treatment would be needed for fuelbreak creation and would involve pruning of desirable leave trees where needed to reduce likelihood of individual torching, followed by prescribed burning to stimulate native grasses. A few individual trees along the margins may be felled to restore meadow characteristics.

Table 2-1. Stand Group Summary

Stand Group	Treatment	Yarding		Under-burning	Planting
A	Commercial Thinning/Pruning/ Pile Burning	25 acres Cable	106 acres Tractor	85 acres	None
B	Commercial Thinning/Pruning/Girdling Pile Burning	96 acres Cable	434 acres Tractor	180 acres	Est. 46 acres
C	Commercial Thinning/Non-commercial thinning/ Pruning/ Pile Burning	12 acres no yarding	44 acres Tractor	57 acres	None
D	Mechanically Chipping/ Mowing/Grapple or Hand Piling/Pruning/Girdling/Burning/Pre Commercial Thinning	540 acres No yarding		266 acres	Est. 30 acres
E	Hand Pruning/ Hand Thinning/Hand Piling/Pile Burning	18 acres No yarding		1 acre	None
F	Prescribed burning	121 acres No yarding		121 acres	None

See map of vegetation groups on the following page.

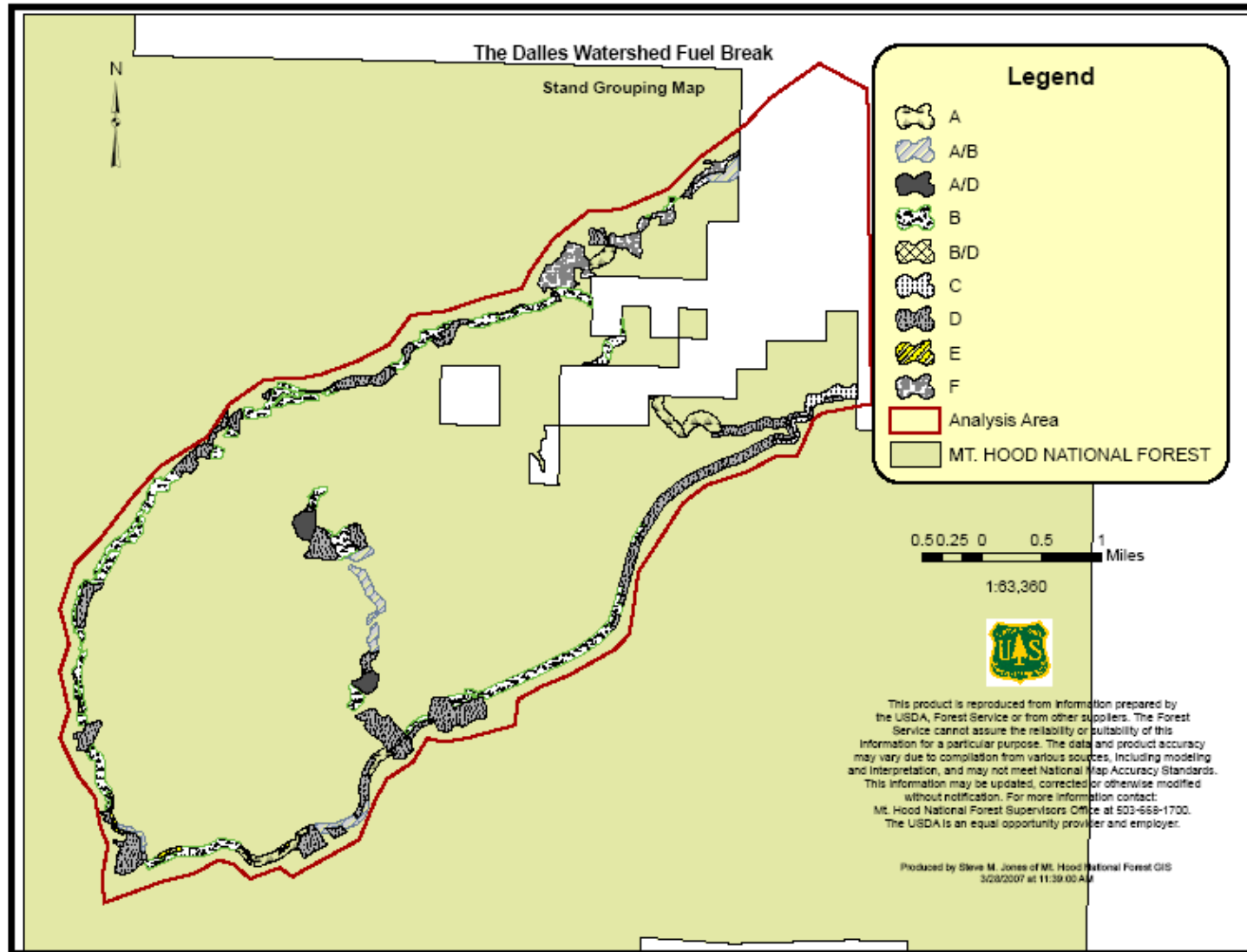


Figure 2.1

Other Activities Proposed

Natural fuels (litter, brush, and trees) would be treated in the action alternative.

Treatment methods will be handpiling, pile burning, underburning, mowing and harvesting. The treatments would be used over a large area to reduce the fuel loadings and modify the fuel profiles of the unit.

Hand Piling

Handpiling is the piling of understory brush, small trees, and down dead woody material by hand crews, into piles of woody debris that may be later burned or utilized. Chainsaws and hand tools would be used to cut the material to aid in the piling operation. Ladder fuels are reduced as a result of the piling of brush and small trees. The fuel loading is reduced by the piling of the down dead woody material. The piles are burned in the fall season.

Pile Burning

Pile burning is the consumption of landing, hand and/or mechanical piles. The hand piles would contain woody material from brush, small trees, and other dead woody material found on the surface. Mechanical piles would contain woody material from within a treatment unit consisting of residual and activity fuels. The landing piles would contain the woody material (limbs, needles, bark and portions of the trunk) removed from the tree during the harvesting procedure. Landing piles are much larger than the hand piles. This disposes of the piled fuel concentrations. The pile burning would occur in the fall season. A burn plan will be written which outlines the parameters under which the burning will occur.

When possible, utilization of piles will be encouraged rather than burning. Utilization is dependent on existing market conditions. After thinning operations, there is a small amount of clean up remaining, which consists of burning the residual piles. Burning the pile eliminates the high concentrations (fuel loading) of woody material when the pile was created.

Underburning

Underburning is the use of prescribed fire underneath existing or residual trees to treat natural and /or created fuels such as, dead woody material, needle litter and dead brush. The majority of the units in the project area will require thinning and/or mowing before underburning can be done safely and effectively. Underburning unit boundaries will be coordinated with individuals from archaeology, silviculture, and fire management. In most of the units needing to be underburned, the burning would be completed one to four years after the original hand piling or mowing is completed. The underburning is conducted in the spring and fall seasons. A burn plan will be written which outlines the parameters under which the burning will occur.

Underburning would occur in stands classified as existing in Fire Regime 1, as described in the Fire and Fuels section. A post-treatment review will determine the need for implementing the underburns.

Mowing/Mastication

The treatment consists of mowing the understory of brush, small trees, and other vegetation. A mowing attachment is towed behind a dozer or tractor, or attached to the head of an excavator.

The vegetation is chopped into small pieces and left on the surface. Ladder fuels are reduced by mowing thus reducing potential for crown fire initiation.

Fireline Construction

In the units to be underburned, firelines will need to be constructed to serve as control lines during burning operations. The firelines will be constructed either with hand crews with hand tools, with a small plow pulled by an ATV, or with another form of mechanized equipment (if needed due to fuels or topography). Firelines will be constructed to minimum standards needed to control the burns. Normally a 4 to 6 foot clearing with a 1 to 1.5 foot wide mineral soil line will be sufficient. The clearing will be cleared of all downed woody fuels, no duff, grasses or other ground cover will need to be removed. Brush may need to be cut out if line locations cannot avoid them.

Combined Fuel Treatments

In some instances, a combination of treatments will occur in the same unit, such as mowing/mastication, thinning, piling, pile burning, and underburning. Underburning would occur at least one year or possibly several years, after other treatments (hand pile, pile burn, thinning, and/or mastication).

All prescribed burning will occur under the guidance of a site specific burn plan that will be developed for each burn area prior to ignition. The burn plan includes the weather and fire behavior prescriptions, resource needs, contingency plans, mitigations, smoke management requirements, lighting techniques, risk assessment, hazard analysis, and site specific resource objectives. Burn plans are written in accordance with the current 5140 directive (FM-5140), and must meet all required elements prior to approval of the plan by the District Ranger or Forest Supervisor.

A fuel treatment summary is located in the project file.

No new permanent road construction would be necessary. Some short temporary spurs would be needed to access landings. Road reconstruction and maintenance is necessary on haul routes identified for this project. Weak areas will be reconstructed and are identified in the road report in Chapter III.

It is expected that vegetation would return at varying rates, which would facilitate a staggered maintenance program. Most of the maintenance would include brush removal. Triggers would be established to determine when an area was ready for future treatment (e.g. when grass or trees get to a certain height). Tall shrubs are reduced significantly after a thinning, but may return to pre-thin levels within 5-7 years (Wilson and Puettmann 2006). Prescribed burning and pile burning would be included as part of the maintenance plan. The Forest Service would work closely with the City of The Dalles on long-term maintenance

Design Criteria/Mitigation Measures

The National Environmental Policy Act defines “mitigation” as avoiding, minimizing, rectifying, reducing, eliminating or compensating project impacts. The following mitigation measures are

an integral part of this project and would be carried out if the project is implemented. In most cases, the effects analysis in Chapter 3 is based on these mitigation measures being implemented.

Soil Resource:

1. All temporary roads, skid trails, and landings will be rehabilitated after project activities are completed in each unit.
2. In commercial units, ground-based harvest systems should not be used on slopes greater than 30 percent to avoid detrimental soil and/or watershed impacts.

Engineering:

1. Haul will be restricted to the normal operating season, unless weather conditions permit operating outside of this window.
2. Snowplowing will be restricted when a freeze/thaw condition is expected or when a saturated base and subgrade would result.

Fuels:

1. Any mechanical slash piling will be done with a grapple piler/excavator.
2. As much as possible, mechanized piles will be free from soil.

Vegetation:

1. Patch openings will be created in root disease pockets. These openings will be planted with root disease resistant species.
2. Retained trees with a dwarf mistletoe rating of 2 or more will be girdled.

Invasive Species:

1. It is recommended that “pre-treatment” occur before any harvest activities are implemented along the 1720190, 1720192, 1721, and the 1721012 roads. The effects of treatment type (hand pulling, mechanical, and/or herbicide treatment) were analyzed in the Barlow Noxious Weed EA and are included in the final Mt. Hood National Forest Invasive Species EIS.
2. In order to prevent any introduction of noxious weed and/or seeds onto National Forest System lands, the actions conducted or authorized by written permit by a purchaser/contractor (if operating outside the road prism) require the cleaning of all heavy equipment prior to entering National Forest System lands. Only construction and maintenance equipment and the equipment necessary to transport said equipment will be allowed to operate within the project area. All subsequent move-ins of equipment to the project area shall be treated in the same manner as the initial move-in. This requirement does not apply to service vehicles, water trucks, log trucks, pickups, cars, and/or similar vehicles.
3. The purchaser/contractor shall give the Forest Service at least 48 hours notice of when equipment is ready for inspection. Notification will include an agreed upon location where the equipment will be available for inspection by the Forest Service. Inspection will be required after every cleaning. The Forest Service shall approve the methods of cleaning and the locations for the cleaning.

4. The process for locating all skid trails and landings will be coordinated with a noxious weed specialist so as to insure these locations are not within any currently established noxious weed populations.
5. If at all possible schedule the implementation of work from infestation-free areas into infested areas rather than vice-versa.
6. If the need for restoration/revegetation of skid trails and landings is identified, the use of native plant materials are the first choice for meeting this objective where timely natural regeneration of the native plant community is not likely to occur. Non-native, non-invasive plant species may be used in any of the following situations: 1) when needed in emergency conditions to protect basic resource values (e.g., soil stability, water quality and to help prevent the establishment of invasive species), 2) as an interim, non-persistent measure designed to aid in the re-establishment of native plants, 3) if native plant materials are not available, or 4) in permanently altered plant communities.
7. Under no circumstances will non-native invasive plant species be used for revegetation.
8. If using straw, hay or mulch for restoration/revegetation in any areas, use only certified, weed-free materials.

Wildlife:

1. The area within the Surveyor's Ridge LSR must have 240 linear feet of down logs/acre (three tree-length logs/acre) and two snags/acre (100% biological potential) remaining post treatment.
2. If a spotted owl activity center is located during the 2007 survey, a seasonal operating restriction (March 1- July 15) would be placed in the area impacted.
3. A seasonal operating restriction (restricting harvest and fuels treatment activities) for winter range would be implemented with this project from December 1 through April 1 for units 1-9.

Visual Quality:

1. Ground disturbance and activity debris resulting from project activities will remain visually subordinate in the immediate foreground of the North Section Line and Surveyor's Ridge Trails.
2. Retain at least three to five trees per acre in the immediate foreground of the North Section Line and Surveyor's Ridge Trails where stands contain suitable trees.
3. All brush piles should be located at least 100 feet from Surveyor's Ridge or North Section Line trails. Piles may be closer if topography or post-treatment vegetation screens the piles from the trail. Piles may also be closer if they will be completely consumed when burned.
4. All stumps within 100 feet of Surveyor's Ridge or North Section Line trails will be cut to less than six inches in height.
5. Prescriptions will ensure that small islands of trees and shrubs will be interspersed along both Surveyor's Ridge and North Section Line trails to aid in holding visual quality.
6. The methods used to rehabilitate landings, skid trails and temporary roads will be designed to meet visual quality standards within foreground of both the Surveyor's Ridge and North Section Line trails.

Riparian Areas:

1. No vegetation removal or manipulation will occur within 50 feet of any perennial and intermittent streams, seeps, springs or wetlands. This will maintain current stream shading which will protect stream temperatures as well as existing aquatic flora and fauna (see footnote *).
2. No mechanized equipment will be allowed within 100 feet of perennial and intermittent streams, seeps, springs or wetlands. This will reduce the chance of sediment delivery to surface water (see footnote *).
3. During road reconstruction, erosion control measures are required (e.g. silt fence, native grass seeding) where de-vegetation may result in delivery of sediment to adjacent surface water. Coordinate with District soil scientist or hydrologist.
4. The structural and hydrological integrity of ephemeral draws will be protected during layout and implementation.
5. Fueling of gas-powered machinery will not occur within 150 feet of any live waters to maintain water quality. Each fueling area shall have a spill kit on site.
6. Temporary roads and landings will be located within project units and outside of Northwest Forest Plan designated Riparian Reserves.
7. Trees should be contour felled or felled away from all surface water.
8. The outer edges of the protection buffer around the seep/spring in unit 20 will be permanently marked to protect *Botrychium minganense* plants from future maintenance of the fuelbreak.

Heritage Resource Sites:

1. The Surveyor's Ridge and North Section Line trails will be flagged with a 25-foot- wide buffer zone for the exclusion of heavy machinery. Exceptions to the 25-foot- wide buffer zone may occur only in portions of units 60 and 70, and throughout unit 72. Exceptions to the buffer would occur only when necessary, in coordination with an archaeologist.
2. Trees harvested within the buffer zone of Surveyor's Ridge or North Section Line trails will be felled directionally away from the trail. No trees will be skidded onto the Surveyor's Ridge Trail. Trees will only be skidded across the North Section Line Trail where previously disturbed ground exists.
3. Hand bucking and piling of slash will be the only method used within the buffer zone of the Surveyor's Ridge Trail. Equipment may reach into the buffer zone to remove slash for grapple piling.
4. There will be no new road construction or landings within 25 feet of Surveyor's Ridge trail. Existing log landings, skid trails and roads can be re-used and previous disruptions in the trail can be used for trail crossings without damage to heritage resources.
5. All trees with historic blazes will be retained and protected along the North Section Line Trail.
6. An interpretive sign about the historic North Section Line Trail and the project will be placed at one end of the trail.

* The Forest Service will meet an *average* distance of 50 feet or 100 feet from streams, seeps, springs or wetlands. From past experience with implementation, it is virtually impossible to maintain an exact distance from a wet area due to stream sinuosity and dense riparian vegetation so allowance for a small deviation will be made as long as this deviation doesn't jeopardize meeting the above stated goals.

7. The portion of Unit 63 adjacent to the North Section Line trail will be limited to hand treatment.
8. Trees immediately adjacent to the Dog River Aqueduct, the Mill Creek Ridge Lookout, the S16 Cabin, the 1720 Can Dump, the Woodgate Road, and the Dufur to Brooks Meadow Road will be felled and yarded directionally away from the feature or buffer zone.
9. Hand bucking and piling of slash will be the only method used within the Dog River Aqueduct corridor [50 feet from the centerline], and the buffer zones for the Surveyor's Ridge Trail, the Dufur to Brooks Meadow Road, the Woodgate Road, and the North Section Line Trail.
10. There will be no skidding across the Dog River Aqueduct.
11. There will be no temporary road construction or landings within 50 feet of the Dog River Aqueduct.
12. The bundle of timbers within the open area on Mill Creek Ridge Lookout will be sprayed with water and foam and protected during burning operations.
13. A 100 foot buffer zone for the exclusion of heavy machinery will be flagged around all structural remains on designated cultural resource sites.
14. Prescribed burning may occur, but machine piling may not occur within the flagged buffer zones.
15. Trees with Section 8 and 9 line and Sections 15 and 22 markers will be flagged for protection from any logging activity.
16. Each tree with an insulator from the Hilleary Grade Telephone Line will be flagged for protection from any logging and will have surface duff and accumulated fuels scraped or raked from the tree base.

Guidelines for Operating within the Municipal Watershed

The Dalles Municipal Watershed's MOU with the US Forest Service and Comprehensive Management Plan (1972) includes guidelines on activities including allowable timber harvests (methods and acreages), road construction and maintenance, and other planning and protection measures to be taken to protect water quality. Those guidelines listed below are more restrictive than the mitigation measures listed above and will be added to the contract.

Sanitary Waste:

1. Privies or suitable toilet facilities shall be provided on-site prior to any sale layout, construction, or harvest activity. These facilities shall not be within 500 feet of any stream, spring, or seepage; secured from weather damage; and be maintained at necessary intervals. Special circumstances will be handled on a case-by-case basis.
2. Disposal of composted human waste is prohibited inside the Watershed area.

Location of the Mt. Hood National Forest in Oregon (left) and the Dalles Watershed in relation to the entire Mt. Hood National Forest *Petroleum Product Care:*

1. Absorbent pads shall be placed on the ground or on stationary equipment such as a loader and yarder to catch spills or leaks.
2. There shall be no discharge of any petroleum product within the Watershed. If oil is changed on-site, all waste materials must be removed from the Watershed.

3. Hydraulic fluid, gasoline, diesel fuel, and any other petroleum product spills or leaks will require immediate and proper attention. Complete removal of contaminated soil may be required.
4. Fixed storage of petroleum products within the Watershed will not be permitted.
5. Application of road emulsions and dust control products (except water) to transportation systems within the Watershed will require Forest Service approval. Forest Service will consult with the City of The Dalles prior to approving any emulsion application.
 - a. Any water tanker used for dust control will not have been used for any other previous chemical storage or application purpose and will not present a potential chemical/bacteriological contamination to the Watershed.

Regulatory Framework

Best Management Practices included in the Proposed Action

According to the NWFP, Best Management Practices (BMPs) will be incorporated into the implementation of the project. BMPs are drawn from General Water Quality Best Management Practices, Pacific Northwest Region (November 1988) and the Draft EPA Region 10 Source Water Protection Best Management Practices for USFS, BLM (April 2005).

Consistency with the Healthy Forest Restoration Act and the Northwest Forest Plan

The Healthy Forest Restoration Act (H. R. 1904—8) requires that projects designed under its authority fully maintain, or contribute toward the restoration of, the structure and composition of old growth stands according to the pre-fire suppression old growth conditions characteristic of the forest type, taking into account the contribution of the stand to landscape fire adaptation and watershed health, and retaining the large trees contributing to old growth structure. This project would retain the structure and composition of pre-fire suppression old growth by promoting fire-adapted species where their health condition does not threaten the overall health of the stand. HFRA provides that old growth direction in the Northwest Forest Plan Record of Decision is sufficient to meet the requirements of the Act. The Northwest Forest Plan ROD recognizes that large-scale disturbances, such as fire, can eliminate spotted owl habitat on hundreds or thousands of acres. Elevated risk levels are attributed to changes in the characteristics and distribution of the mixed conifer forests resulting from past fire protection. Management activities designed to reduce risk levels are encouraged in Late Successional Reserves even if a portion of the activities must take place in currently late successional habitat (S &G C-13, ROD).

Large tree retention:

The proposed treatments meet this requirement by retaining large trees suitable to the site in mature stands, and reducing stand density that has increased since the exclusion of fire. Large trees would be retained where they do not threaten the overall health of the stand. Trees with dwarf mistletoe threaten the overall health of the stand and will either not be retained or will be girdled. The HFRA states that the large tree retention requirement must not prevent agencies from reducing wildland fire risk to communities, municipal water supplies, and at-risk Federal land.

Mt. Hood Land and Resource Management Plan Standard & Guidelines

Standards and guidelines in the Mt. Hood Forest Plan were not written to address fuelbreaks or fuels reduction. When the Mt. Hood Forest Plan was written, it emphasized traditional timber sales, rather than fuels reduction projects. The following standards would not be met with this proposal.

- Down Wood Material (FW-219): An average total of at least 6 logs per acre in decomposition classes 1, 2 and 3 should be retained in all project activity areas.
- Snags (FW-215): Where new timber harvest units occur, wildlife trees (i.e. snags and green reserve trees) should be maintained in sufficient quantity and quality to support over time at least 60 percent of the maximum biological potential of primary cavity nesting species.
- Research Natural Area (A3-023): Hazard trees may be cut or knocked down, but should not be removed from the site.
- Silvicultural Systems (FW-333): Uneven-age management should not be applied on slopes where cable logging systems would be necessary (30+% slopes).
- Silvicultural Systems (FW-337). Uneven-aged management should not be applied where stands are moderately to heavily infected with dwarf mistletoe.
- Organic Matter (FW-033): At least 15 tons per acre of dead and down woody material is east side vegetation communities...should be maintained and evenly distributed across managed sites.

Exceptions to these standards are required to meet the purpose and need of effective fuel reduction along roads. This is acceptable if identified during the interdisciplinary planning analysis. All other standards and guidelines will be met with this proposal.

NFMA Findings for Vegetation Manipulation

As required by regulations (FSH 1909.12 5.31a), “all proposals that involve vegetative manipulation of tree cover for any purpose must comply with the seven requirements found at 36 CFR 219.27(b).” All of these requirements are met by the project (refer to project record exhibit R-1).

Suitability for Timber Production

The primary objective of the proposal is fuel reduction rather than timber production. However, as a pre-cursor to the silvicultural diagnosis process, stand examinations are conducted to determine existing stand conditions, and a determination of suitability (in regard to management of the stand for timber production) is made for each stand. Stands proposed for harvest treatment in The Dalles Watershed Fuelbreak were examined for suitability in accordance with 36 CFR 219.13, Timber resource land suitability. Stands outside the Research Natural Area were found to be suitable for timber management based upon the following:

Meet the definition of forestland as described in 36 CFR 219.3.

Technological feasibility exists to ensure soil productivity and watershed protection. All sites considered for treatment would use established harvesting and site preparation methods. In combination with resource protection standards in the Forest Plan and applicable Best Management Practices, these methods would be sufficient to protect soil and water resource values.

There is reasonable assurance that lands can be restocked within 5 years of final harvest (*this generally does not apply to the proposed harvest units, as they would be thinned. Small openings in root disease pockets would be regenerated with rot-resistant species.*).

The Mt. Hood Forest Plan has identified and mapped lands that are unsuitable for timber production based on the above listed criteria. The fuelbreak includes 87 acres within Management Area A3, Research Natural Area, and would be treated as part of the units shown in Table 3-8- in Alternative 2. Fuel treatment of this area to provide protection to non-RNA acreage is consistent with the direction in the Forest Plan for unsuitable lands (Forest Plan page Four-150). The lands treated within the RNA are not being treated for timber management. There are currently no research projects occurring within the RNA.

Table 2-3. Fuelbreak within RNA

Units	Rx	Method	Acres in RNA
73, 78, 88	Thin	Cable	21
75, 76, 81, 87	Thin	Tractor	18
74, 77, 79	Sapling and brush Thin	Mech	13
73A	Sapling and brush Thin	Hand	.23
80, 83, 86	Prune and/ or Burn	Hand	33.5

Suitability for uneven-aged management

Forest Plan guidelines advise against uneven aged management in stands with dwarf mistletoe and/or root disease. It states “However, silvicultural prescriptions may specify appropriate mitigation measures in Management Areas where uneven-aged management is being considered to fulfill resource objectives other than timber production.” (Mt. Hood FP, Four-88). The resource objective here is fuel reduction while maintaining structure for aesthetics, wildlife, nutrient cycling, and future stand composition and health. Mitigation measures such as patch openings and girdling are written into the design of the proposed action to meet Forest Plan direction.

Aquatic Conservation Strategy Objectives

In order for a project to proceed, “a decision maker must find that the proposed management activity is consistent with the Aquatic Conservation Strategy objectives” (NWFP ROD B-10). The nine objectives are listed on page B-11 of the ROD. The effects analysis above has focused

on key parameters or indicators that make up elements of the nine Aquatic Conservation Strategy objectives, to determine if The Dalles Fuelbreak project will restore, maintain, or degrade these indicators. Once this determination has been made, the indicators should be examined together to make a final determination of whether the project is consistent with the objectives. Indicators pertinent to The Dalles Watershed Fuels Reduction Project include water temperature, sediment, large woody debris, pool quantity, pool quality, and general condition of riparian reserves.

The following is a summary of how this project compares to the Aquatic Conservation Strategy objectives (ROD B-10):

- **ACS Objective #1.** This project will at maintain and potentially enhance the distribution, diversity and complexity of watershed and landscape-scale features because of the protection that the Riparian Reserves provide to the aquatic and terrestrial systems and possible enhancement of the Riparian Reserves by thinning activities within them. No new road crossings of streams or wetlands are proposed, which would maintain the current level of aquatic habitat fragmentation. Channel components that contribute to channel complexity (pool quantity and quality, substrate, flows) will be maintained because of the riparian areas are buffered.
- **ACS Objective #2.** The project will maintain spatial and temporal connectivity within and between watersheds. Nothing proposed with this project will reduce the spatial and temporal connectivity.
- **ACS Objective #3.** This project will maintain the physical integrity of the aquatic system, including streambanks, sidechannels (refugia), and channel bottom configurations through the no-entry buffers in riparian areas. Project design elements and mitigation measures aimed at reducing soil compaction and erosion and the lack of any new stream crossings will greatly reduce risks of increased peak flow, and resulting bank erosion and channel bed scour. There are no temporary roads entering the Riparian Reserves and immeasurable short-term inputs of sediment are expected to be very localized if they occur.
- **ACS Objective #4.** This project will maintain water quality necessary to support healthy ecosystems through mitigation measures and recognition of Riparian Reserves. Project design features aimed at reducing erosion will maintain the overall sediment levels in the long term, but there is a low risk of a short term, limited increase. Since the amount of sediment is so small and not expected to effect watershed function, the project will maintain this element.
- **ACS Objective #5.** This project will maintain sediment regimes through riparian buffers and mitigation that includes erosion control. There is a low risk of slight inputs of sediment from treatment areas, but they are anticipated to be very small and localized.
- **ACS Objective #6.** This project will maintain in-stream flows through project design features and riparian buffers.
- **ACS Objective #7.** This project will maintain the timing, variability, and duration of

floodplain inundation through protection of riparian areas.

- **ACS Objective #8.** This project will maintain the species composition and structural diversity of plant communities in riparian areas and wetlands, as riparian areas will be buffered and special plant populations will be designated for protection with permanent marking. This project is consistent with riparian reserve standards and guidelines. The action alternative is designed to meet TM-1 c. “Apply silvicultural practices for riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.”
- **ACS Objective #9.** This project will maintain habitat to support well-distributed populations of native plant and riparian dependent species, as few riparian areas will be treated, and riparian buffers will be in place within those that are treated.

Comparison of Alternatives

This section provides a summary of the effects and trade-offs of no action versus implementing the proposed action. It compares the two alternatives in terms of how they meet project objectives (purpose and need as stated in Chapter 1) and how they address concerns/issues identified during public scoping. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 2-2. Comparison of Alternatives in Relation to Identified Objectives and/or Issues Raised by the Public		
Objective or Issue	No Action	Proposed Action
<i>Objective:</i> Reduce the risk of uncharacteristic wildfire on forest ecosystem components, especially the risk of a severe wildfire contributing to the degradation of water quality	Does not meet objective.	Meets the objective.
<i>Objective:</i> Provide locations for wildland firefighter forces to quickly suppress a severe wildfire	Does not meet objective.	Meets the objective.
<i>Objective:</i> Increase firefighter safety during wildland fire suppression efforts	Does not meet objective.	Meets the objective.
<i>Issue:</i> Reducing the cover along perimeter roads in the watershed may increase the risk of poaching of deer and elk	Existing condition provides cover in some areas of perimeter roads.	Cover will be reduced in the area immediately adjacent to perimeter roads. Leaving wildlife cover would significantly reduce the effectiveness of the fuelbreak.
<i>Issue:</i> Temporary Roads	No temporary roads would be constructed.	Temporary roads would be rehabilitated after project implementation.